

HYDROCARBON ANALYSIS FOOTNOTES

2/94, Rev. 3

VOLATILE HYDROCARBONS - GASOLINE RANGE ORGANICS

- G 1 This sample appears to contain extractable diesel range organics.
- G 2 The chromatogram for this sample does not resemble a typical gasoline pattern. Please refer to the sample chromatogram.
- G 3 The total hydrocarbon result in this sample is primarily due to an individual compound(s) eluting in the volatile hydrocarbon range. Identification and quantitation by EPA 8010, 8021 or 8240 is recommended.
- G 4 This sample contains compound(s) not identified as Benzene, Toluene, Ethyl benzene or Xylene.
- G 5 This sample appears to contain or be saturated with gasoline product.

EXTRACTABLE HYDROCARBONS - DIESEL RANGE ORGANICS

- D 1 This sample appears to contain volatile gasoline range organics.
- D 2 The hydrocarbons present in this sample resemble heavy, non-resolvable oil range organics. Quantitation by TPH-Diesel Extended or TPH 418.1 is recommended.
- D 3 The hydrocarbon concentration result in this sample is partially due to an individual peak(s) eluting in the diesel / motor oil carbon range.
- D 4 The hydrocarbons present in this sample are a complex mixture of diesel range and heavy oil range organics.
- D 5 The hydrocarbon result shown is an estimated (greater than) value due to the high concentration. Reanalysis is being performed to yield a quantitative result. An amended report will follow.
- D 6 The sample chromatographic pattern does not resemble the fuel standard used for quantitation. A fuel fingerprint is advised.
- D 7 This sample appears to contain or be saturated with diesel product.

Oils and Lubricants

[-----]
TRPH 418.1

Diesel & Fuel Oils

[-----]
Extractable Hydrocarbons (TPH-D)

Gasoline

[-----]
Volatile Hydrocarbons (TPH-G)

HYDROCARBON BOILING POINT RANGE

LOW LOW TO MEDIUM MEDIUM MEDIUM TO HIGH VERY HIGH

CARBON RANGE:

B - 44

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 +

GeoEngineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052
Attention: Jim Roth

Client Project ID: UNOCAL Marysville, #6357
Sample Matrix: Soil
Analysis Method: WTPH-D
Units: mg/kg (ppm)

Analyst: T. Fitzgibbon
Extracted: Oct 6, 1995
Analyzed: Oct 6-7, 1995
Reported: Oct 9, 1995

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT Laboratory Control Sample

Diesel

Spike Conc.
Added: 68

Spike
Result: 69

%
Recovery: 101

Upper Control
Limit %: 125

Lower Control
Limit %: 72

PRECISION ASSESSMENT Sample Duplicate

Diesel Range
Hydrocarbons

Sample
Number: B510097-01

Original
Result: N.D.

Duplicate
Result: N.D.

Relative % Difference: Relative Percent Difference values are not reported at sample concentration levels less than 10 times the Reporting Limit.

Maximum
RPD: 42

NORTH CREEK ANALYTICAL Inc

Laura Dutton

Laura Dutton
Project Manager

% Recovery:	$\frac{\text{Spike Result}}{\text{Spike Concentration Added}} \times 100$
Relative % Difference:	$\frac{\text{Original Result} - \text{Duplicate Result}}{(\text{Original Result} + \text{Duplicate Result}) / 2} \times 100$

510102.GEO <8>

GeoEngineers

OCT 05 1995

Routing

File

YLR H H H
167-436

Dear Consultant:

Enclosed please find your UNOCAL project and chain of custody. To help better serve you and UNOCAL, Inc., we would appreciate your cooperation in taking a few moments to fill in the "Final Report Approval" section of the Chain of Custody (bottom right hand corner) and faxing it back to North Creek Analytical, at (206) 485-2992 Attention: Bethany White. This allows us to proceed with invoicing to UNOCAL.

We appreciate your assistance in helping us with this request.

NORTH CREEK ANALYTICAL, Inc.

Administrative Department

GeoEngineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052
Attention: Jim Roth

Project Name: UNOCAL Marysville, #6357
Client Project : #0161-436-R04 (1.1)
NCA Project #: B509532

Received: Sep 26, 1995
Reported: Oct 3, 1995

PROJECT SUMMARY PAGE

GeoEngineers

OCT 05 1995

Laboratory Sample Number	Sample Description	Sample Matrix	Date Sampled
B509532-01	FI1-1-3.5	Soil	9/26/95
B509532-02	FI1-1-5.5	Soil	9/26/95
B509532-03	FI1-4-3.5	Soil	9/26/95
B509532-04	FI2-1-3.5	Soil	9/26/95
B509532-05	FI2-4-3.0	Soil	9/26/95
B509532-06	PL-1-3.0	Soil	9/26/95
B509532-07	PL-2-3.5	Soil	9/26/95
B509532-08	PL-3-3.0	Soil	9/26/95

Routing *JGR* ☐ ☐ ☐
File ☐ ☐ ☐

The results in this report apply to the samples analyzed in accordance with the chain of custody document.
This analytical report must be reproduced in its entirety.

NORTH CREEK ANALYTICAL Inc.

Laura Dutton

Laura Dutton
Project Manager

GeoEngineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052
Attention: Jim RothClient Project ID: UNOCAL Marysville, #6357
Sample Matrix: Soil
First Sample #: B509532-01Received: Sep 26, 1995
Reported: Oct 3, 1995**TOTAL SOLIDS & MOISTURE CONTENT REPORT**

Sample Number	Sample Description	Total Solids %	Moisture Content %
B509532-01	FI1-1-3.5	92	8.0
B509532-02	FI1-1-5.5	94	6.0
B509532-03	FI1-4-3.5	90	10
B509532-04	FI2-1-3.5	93	7.0
B509532-05	FI2-4-3.0	93	7.0
B509532-06	PL-1-3.0	95	5.0
B509532-07	PL-2-3.5	94	6.0
B509532-08	PL-3-3.0	94	6.0

The enclosed analytical results for soils, sediments and sludges have been converted to a DRY WEIGHT reporting basis.
To attain the wet weight "as received" equivalent, multiply the dry weight result by the decimal fraction of percent Total Solids.

NORTH CREEK ANALYTICAL Inc.

Laura Dutton
Project Manager

GeoEngineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052
Attention: Jim Roth

Client Project ID: UNOCAL Marysville, #6357
Sample Matrix: Soil
Analysis Method: WTPH-G
First Sample #: B509532-01

Sampled: Sep 26, 1995
Received: Sep 26, 1995
Analyzed: 9/29-10/2/95
Reported: Oct 3, 1995

TOTAL PETROLEUM HYDROCARBONS-GASOLINE RANGE

Sample Number	Sample Description	Sample Result mg/kg (ppm)	Surrogate Recovery %
B509532-01	FI1-1-3.5	7,800	S-2
B509532-02	FI1-1-5.5	N.D.	97
B509532-03	FI1-4-3.5	N.D.	95
B509532-04	FI2-1-3.5	N.D.	99
B509532-05	FI2-4-3.0	N.D.	96
B509532-06	PL-1-3.0	N.D.	98
B509532-07	PL-2-3.5	N.D.	97
B509532-08	PL-3-3.0	N.D.	99
BLK092995	Method Blank	N.D.	94

Reporting Limits

1.0

4-Bromofluorobenzene surrogate recovery control limits are 50 - 150 %.

Volatile Total Petroleum Hydrocarbons are quantitated as Gasoline Range Organics (toluene - dodecane).

Analytes reported as N.D. were not detected above the stated Reporting Limit. The results reported above are on a dry weight basis.

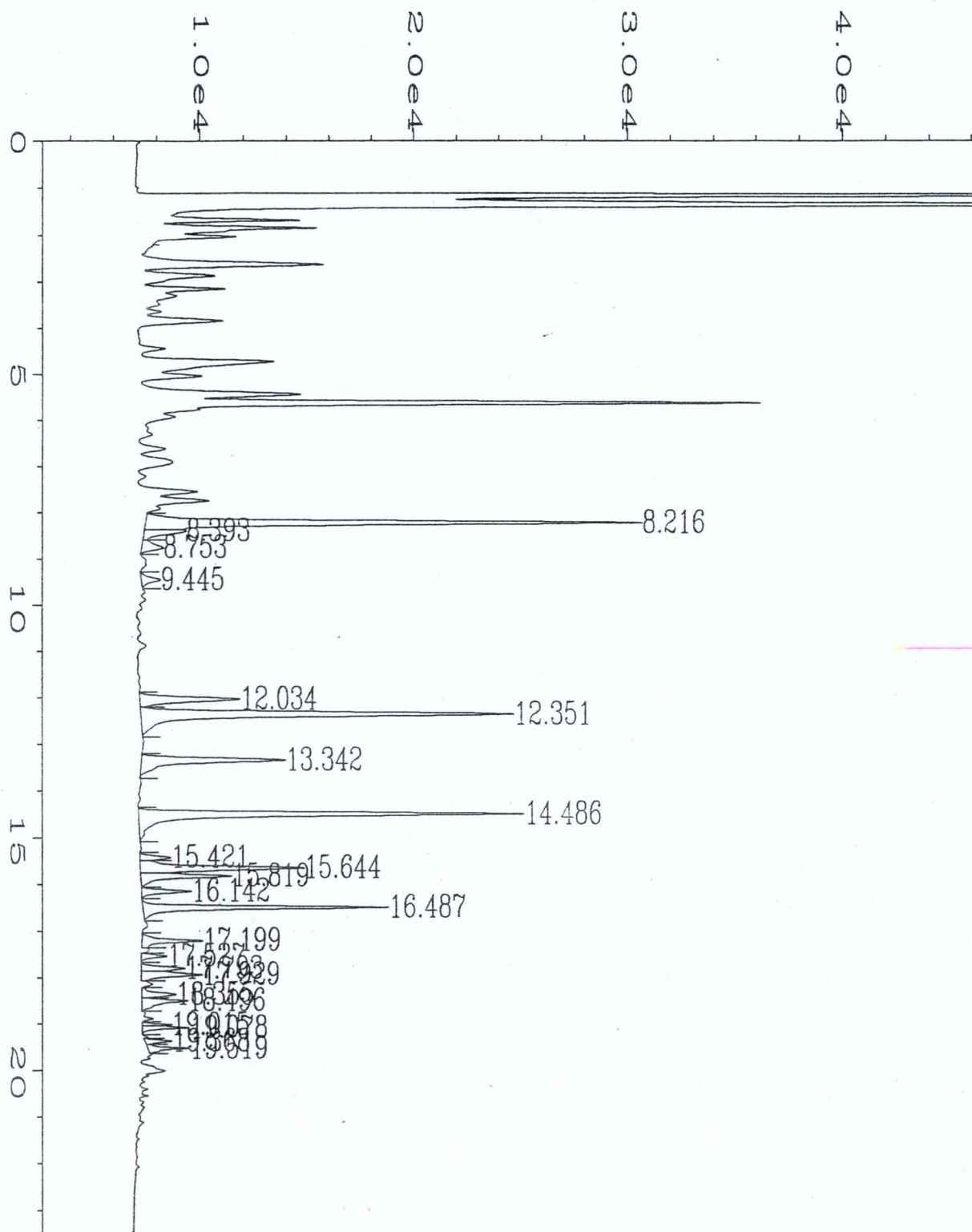
NORTH CREEK ANALYTICAL In

Please Note:

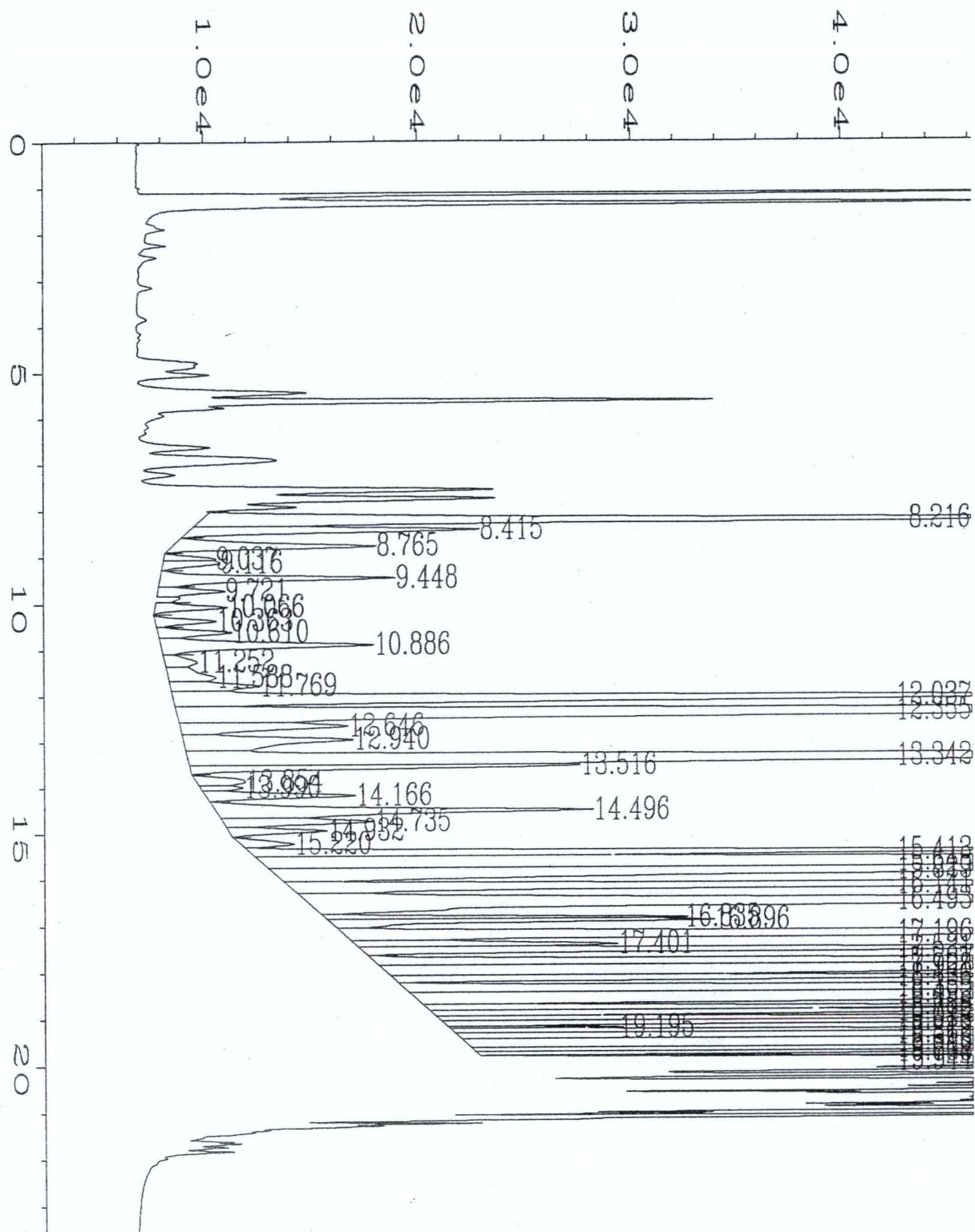
S-2 = The Surrogate Recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.

Laura Dutton

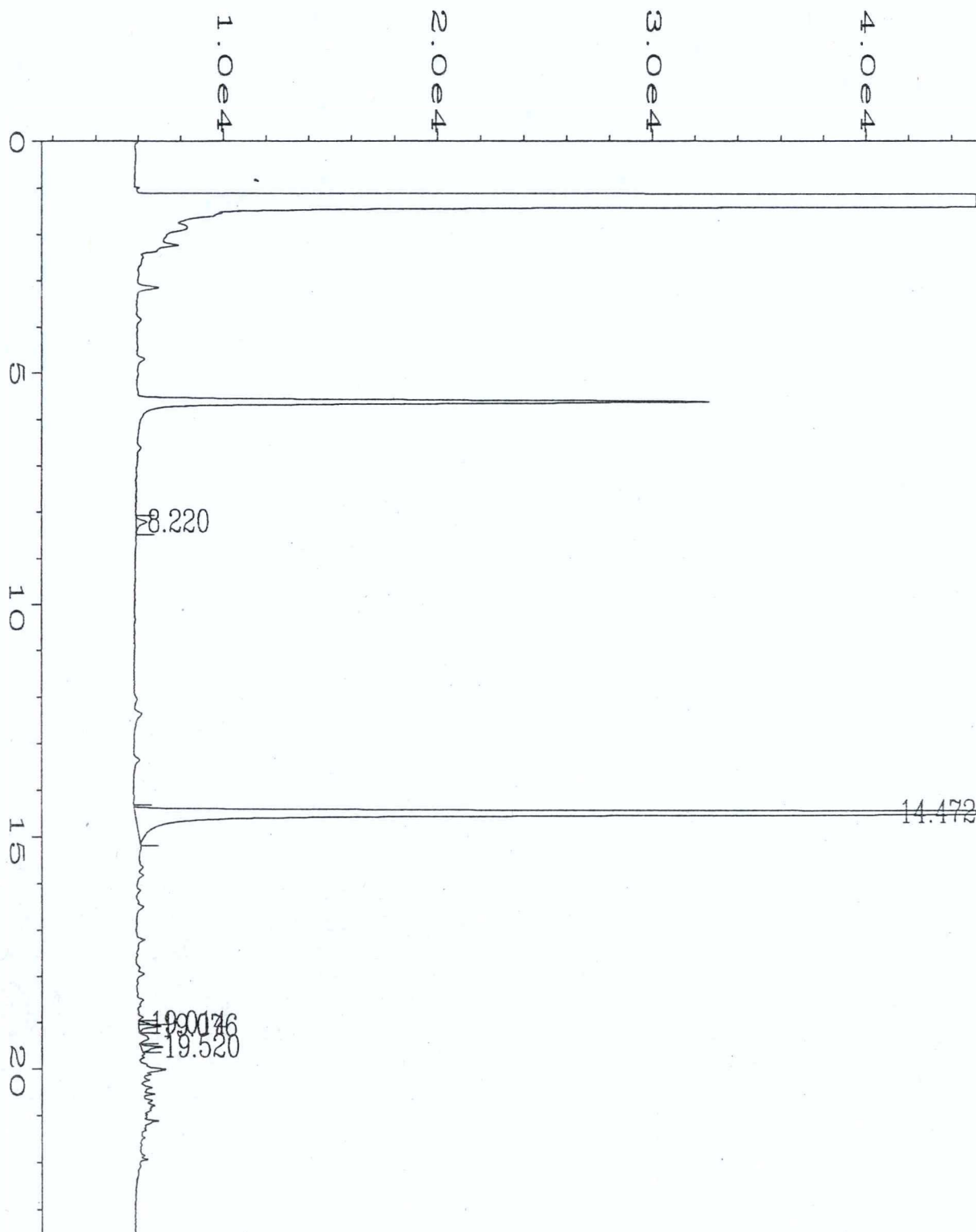
Laura Dutton
Project Manager



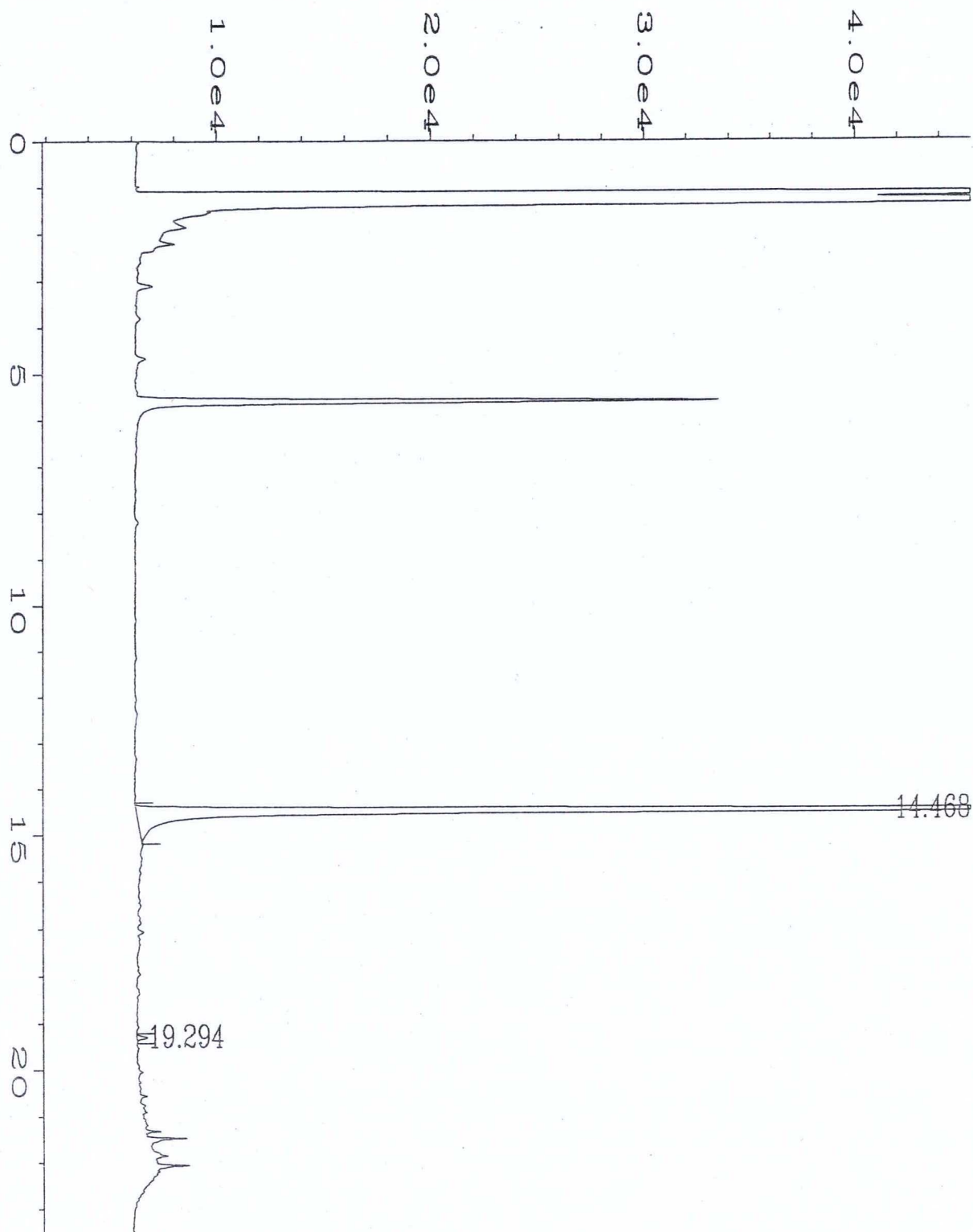
Data File Name	: C:\HPCHEM\2\DATA\100295\002F0101.D	Page Number	: 1
Operator	:	Vial Number	: 2
Instrument	: GC#6	Injection Number	: 1
Sample Name	: gas std	Sequence Line	: 1
Run Time Bar Code:		Instrument Method:	WA-WATER.MTH
Acquired on	: 02 Oct 95 08:36 AM	Analysis Method	: WA-WATER.MTH
Report Created on:	02 Oct 95 09:00 AM		
Sample Info	: 500 ng V-8j		



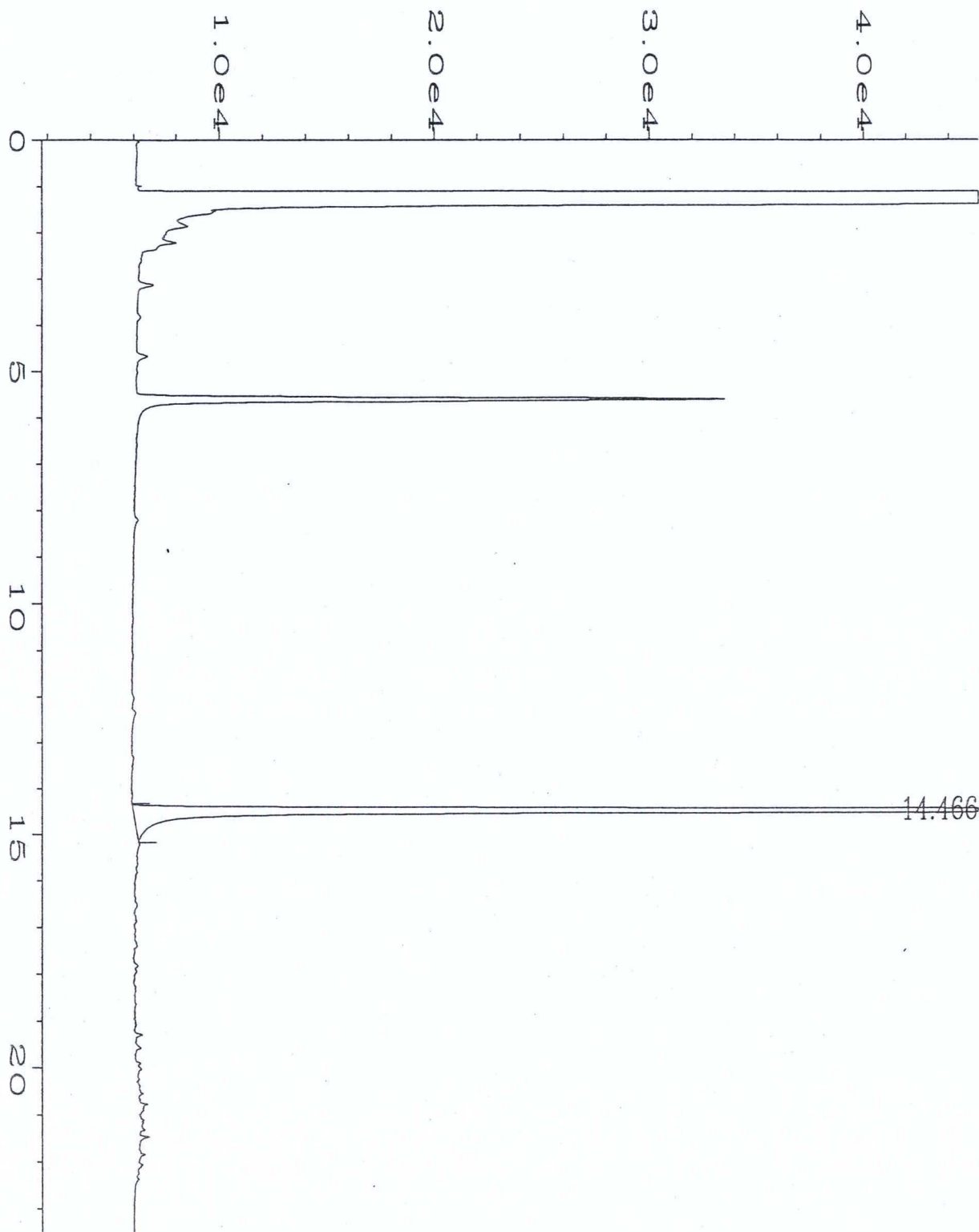
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Operator	:	Vial Number	: 7
Instrument	: GC#6	Injection Number	: 1
Sample Name	: b509532-01	Sequence Line	: 1
Run Time Bar Code:		Instrument Method:	WA-SOIL.MTH
Acquired on	: 02 Oct 95 12:13 PM	Analysis Method	: WA-SOIL.MTH
Report Created on:	02 Oct 95 12:37 PM		
Multiplier	: 20		
Sample Info	: 5 ul		



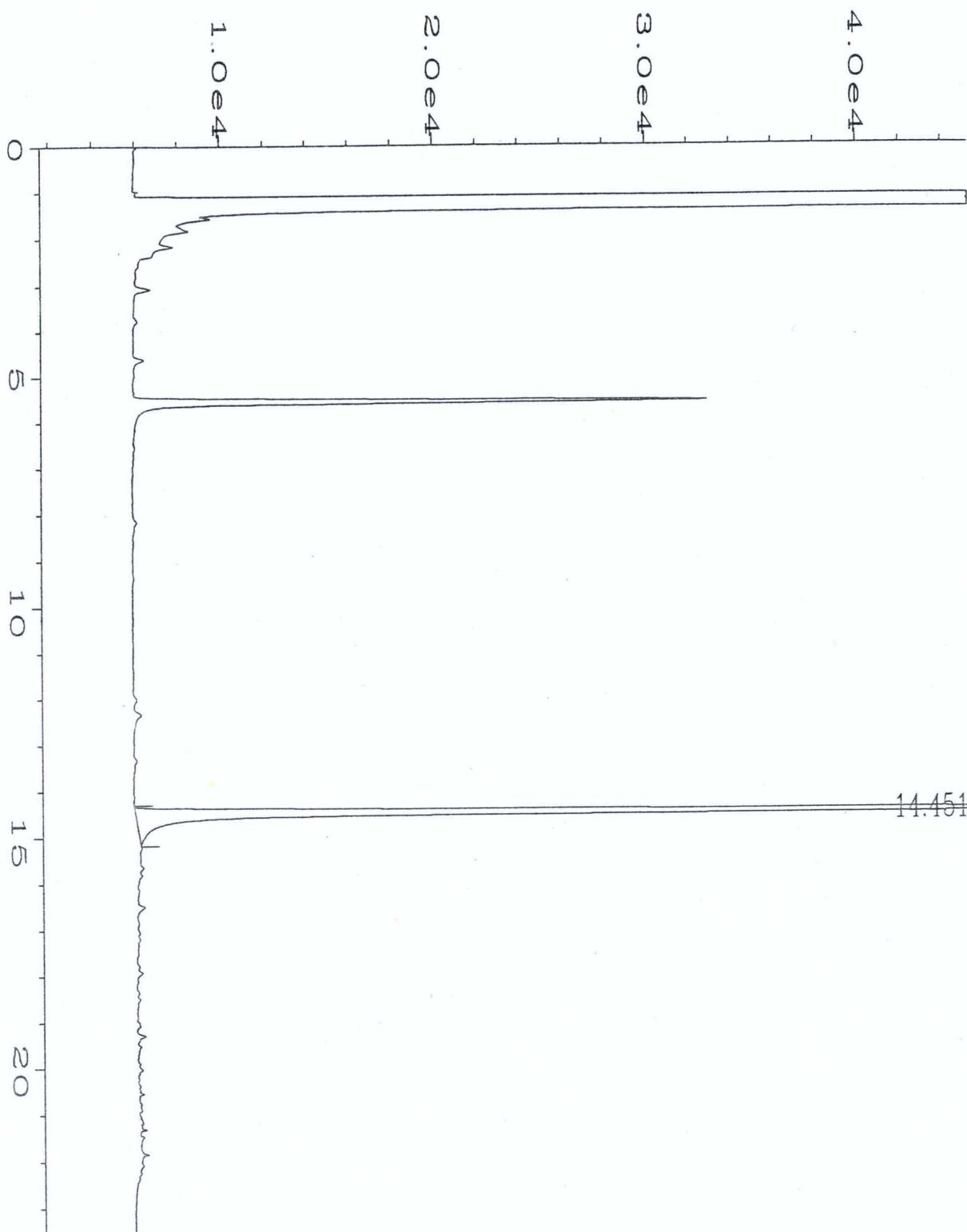
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Operator	:	Vial Number	: 20
Instrument	: GC#6	Injection Number	: 1
Sample Name	: b509532-02 r1	Sequence Line	: 6
Run Time Bar Code:		Instrument Method:	WA-SOIL.MTH
Acquired on	: 02 Oct 95 06:36 PM	Analysis Method	: WA-SOIL.MTH
Report Created on:	02 Oct 95 06:59 PM		
Sample Info	: 100 ul		



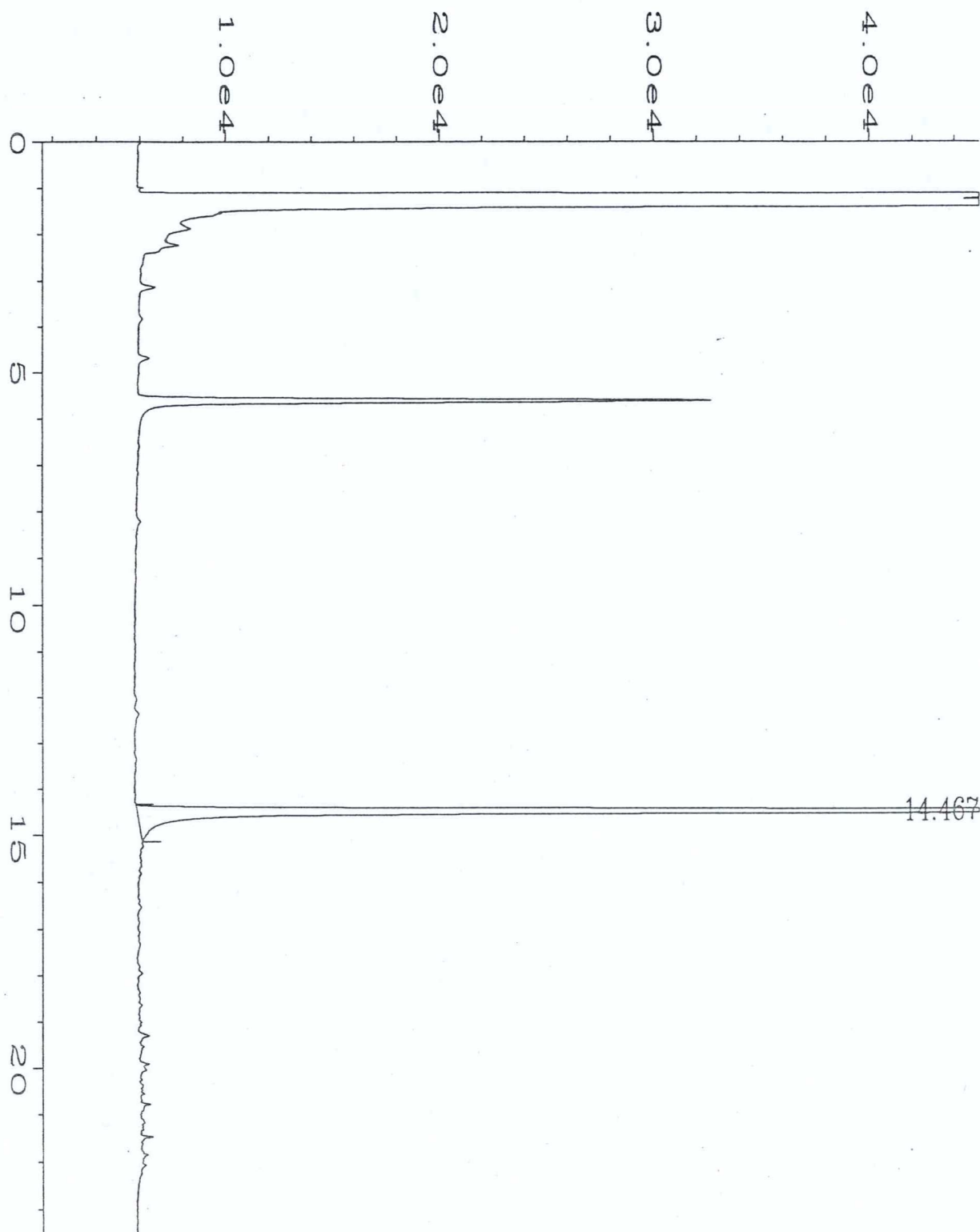
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Operator	:	Vial Number	: 11
Instrument	: GC#6	Injection Number	: 1
Sample Name	: b509532-03	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	WA-SOIL.MTH
Acquired on	: 02 Oct 95 02:11 PM	Analysis Method	: WA-SOIL.MTH
Report Created on:	02 Oct 95 02:35 PM		
Sample Info	: 100 ul		



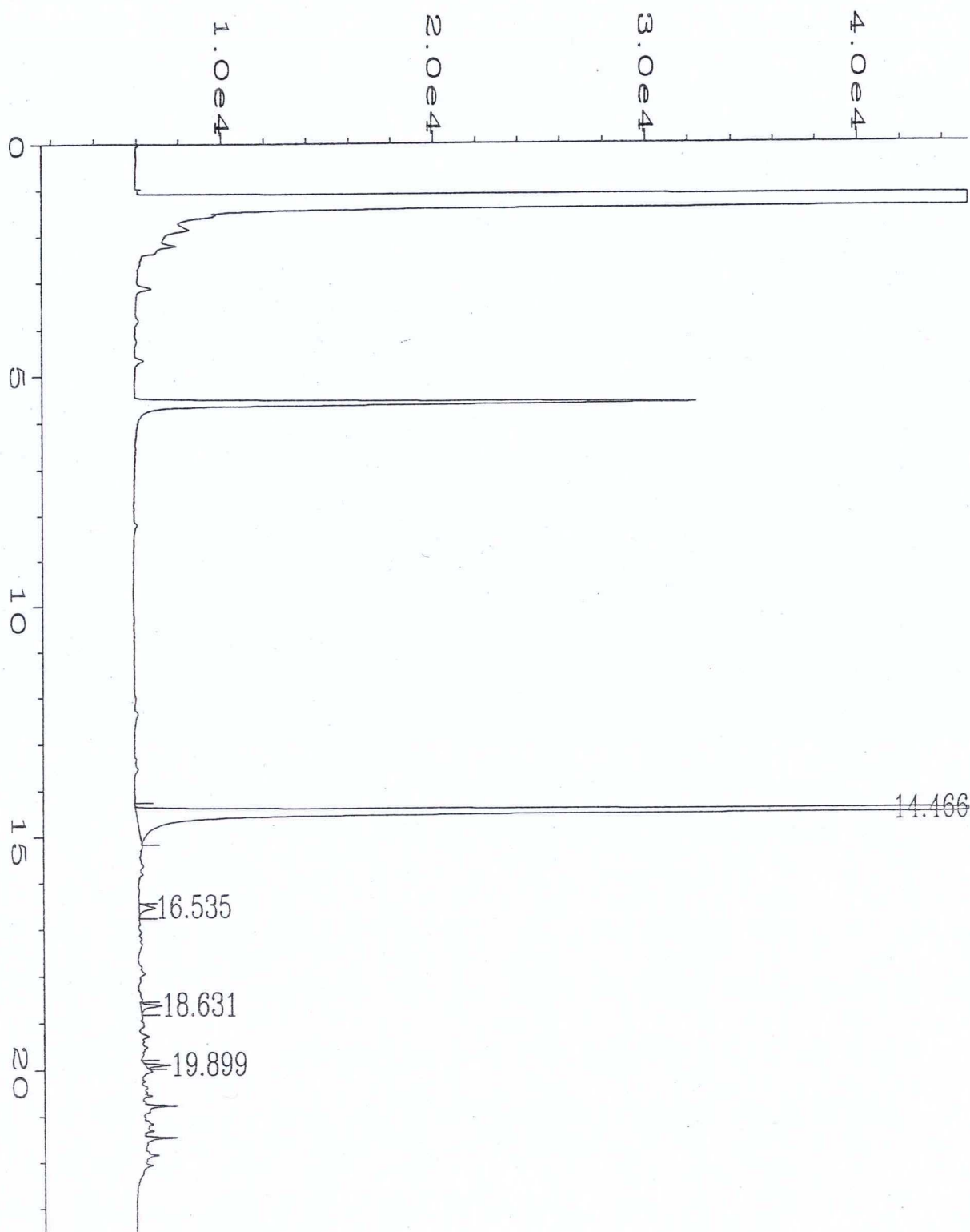
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Operator	:	Vial Number	: 12
Instrument	: GC#6	Injection Number	: 1
Sample Name	: b509532-04	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	WA-SOIL.MTH
Acquired on	: 02 Oct 95 02:40 PM	Analysis Method	: WA-SOIL.MTH
Report Created on:	02 Oct 95 03:04 PM		
Sample Info	: 100 ul		



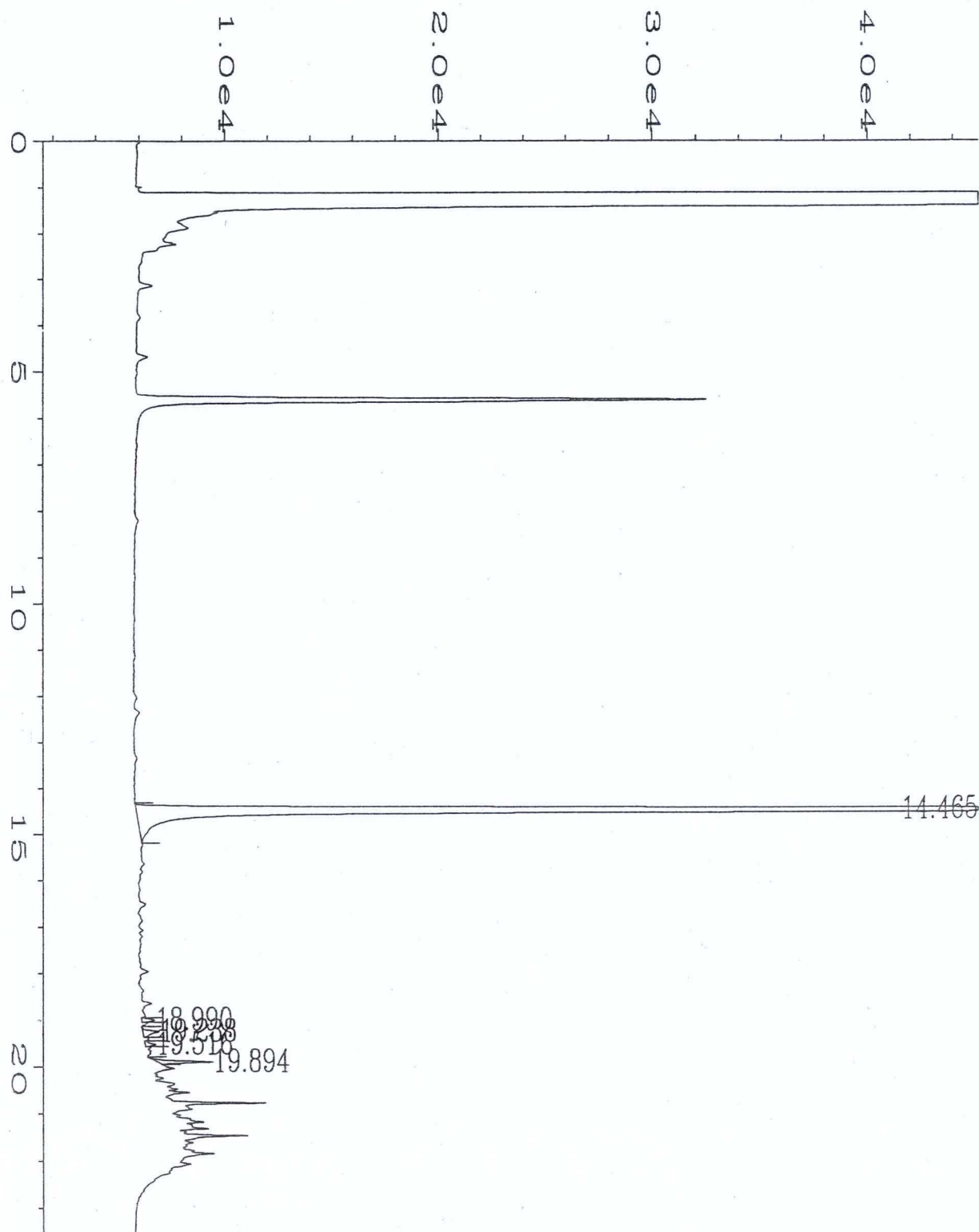
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Operator	:	Vial Number	: 13
Instrument	: GC#6	Injection Number	: 1
Sample Name	: b509532-05	Sequence Line	: 3
Run Time Bar Code:		Instrument Method	: WA-SOIL.MTH
Acquired on	: 02 Oct 95 03:10 PM	Analysis Method	: WA-SOIL.MTH
Report Created on:	02 Oct 95 03:33 PM		
Sample Info	: 100 ul		



Data File Name	: C:\HPCHEM\2\DATA\100295\014F0301.D	Page Number	: 1
Operator	:	Vial Number	: 14
Instrument	: GC#6	Injection Number	: 1
Sample Name	: b509532-06	Sequence Line	: 3
Run Time Bar Code:		Instrument Method	: WA-SOIL.MTH
Acquired on	: 02 Oct 95 03:39 PM	Analysis Method	: WA-SOIL.MTH
Report Created on:	02 Oct 95 04:03 PM		
Sample Info	: 100 ul		



Data File Name	: C:\HPCHEM\2\DATA\100295\015F0301.D	Page Number	: 1
Operator	:	Vial Number	: 15
Instrument	: GC#6	Injection Number	: 1
Sample Name	: b509532-07	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	WA-SOIL.MTH
Acquired on	: 02 Oct 95 04:08 PM	Analysis Method	: WA-SOIL.MTH
Report Created on:	02 Oct 95 04:32 PM		
Sample Info	: 100 ul		



Data File Name	: C:\HPCHEM\2\DATA\100295\016F0301.D	Page Number	: 1
Operator	:	Vial Number	: 16
Instrument	: GC#6	Injection Number	: 1
Sample Name	: b509532-08	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	WA-SOIL.MTH
Acquired on	: 02 Oct 95 04:38 PM	Analysis Method	: WA-SOIL.MTH
Report Created on:	02 Oct 95 05:02 PM		
Sample Info	: 100 ul		

GeoEngineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052
Attention: Jim Roth

Client Project ID: UNOCAL Marysville, #6357
Sample Matrix: Soil
Analysis Method: WTPH-G
Units: mg/kg (ppm)

Analyst: B. Christlieb
F. Shino
Analyzed: 9/29-10/2/95
Reported: Oct 3, 1995

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT Laboratory Control Sample

Gasoline

Spike Conc.
Added: 5.0

Spike
Result: 3.6

%
Recovery: 72

Upper Control
Limit %: 115

Lower Control
Limit %: 33

PRECISION ASSESSMENT Sample Duplicate

Gasoline Range
Hydrocarbons

Sample
Number: B509532-08

Original
Result: N.D.

Duplicate
Result: N.D.

Relative % Difference Relative Percent Difference values are not reported at sample concentration levels less than 10 times the Detection Limit.

Maximum
RPD: 67

NORTH CREEK ANALYTICAL Inc.

Laura Dutton

Laura Dutton
Project Manager

% Recovery: $\frac{\text{Spike Result}}{\text{Spike Concentration Added}} \times 100$

Relative % Difference: $\frac{\text{Original Result} - \text{Duplicate Result}}{(\text{Original Result} + \text{Duplicate Result}) / 2} \times 100$

GeoEngineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052
Attention: Jim Roth

Client Project ID: UNOCAL Marysville, #6357
Sample Matrix: Soil
Analysis Method: EPA 8020
First Sample #: B509532-01

Sampled: Sep 26, 1995
Received: Sep 26, 1995
Analyzed: 9/29-10/2/95
Reported: Oct 3, 1995

BTEX DISTINCTION

Sample Number	Sample Description	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)	Surrogate Recovery %
B509532-01	FI1-1-3.5	N.D. (R.L. = 0.40)	24	18	220	S-2
B509532-02	FI1-1-5.5	N.D.	N.D.	N.D.	N.D.	109
B509532-03	FI1-4-3.5	N.D.	N.D.	N.D.	N.D.	104
B509532-04	FI2-1-3.5	N.D.	N.D.	N.D.	N.D.	108
B509532-05	FI2-4-3.0	N.D.	N.D.	N.D.	N.D.	106
B509532-06	PL-1-3.0	N.D.	N.D.	N.D.	N.D.	110
B509532-07	PL-2-3.5	N.D.	N.D.	N.D.	N.D.	109
B509532-08	PL-3-3.0	N.D.	N.D.	N.D.	N.D.	110
BLK	Method Blank	N.D.	N.D.	N.D.	N.D.	101

Reporting Limits:

0.050 0.050 0.050 0.10

4-Bromofluorobenzene surrogate recovery control limits are 34 - 166 %.
Analytes reported as N.D. were not detected above the stated Reporting Limit.
The results reported above are on a dry weight basis.

NORTH CREEK ANALYTICAL In

Please Note:

S-2 = The Surrogate Recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.

Laura Dutton

Laura Dutton
Project Manager

GeoEngineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052
Attention: Jim Roth

Client Project ID: UNOCAL Marysville, #6357
Sample Matrix: Soil
Analysis Method: EPA 8020
Units: mg/kg (ppm)
QC Sample #: B509504-01

Analyst: B. Christlieb
F. Shino

Analyzed: Sep 29, 1995
Reported: Oct 3, 1995

MATRIX SPIKE QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Sample Result:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	0.58	0.58	0.58	1.75
Spike Result:	0.47	0.45	0.47	1.44
Spike % Recovery:	81%	78%	81%	82%
Spike Dup. Result:	0.48	0.46	0.48	1.48
Spike Duplicate % Recovery:	83%	79%	83%	85%
Upper Control Limit %:	111	118	120	128
Lower Control Limit %:	59	55	61	55
Relative % Difference:	2.1%	2.2%	2.1%	2.7%
Maximum RPD:	17	16	17	17

NORTH CREEK ANALYTICAL Inc.



Laura Dutton
Project Manager

% Recovery:	$\frac{\text{Spike Result} - \text{Sample Result}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Spike Result} - \text{Spike Dup. Result}}{(\text{Spike Result} + \text{Spike Dup. Result}) / 2} \times 100$

UNOCAL INFORMATION

Facility Number: SS #6357

Site Address: 6425 33RD AVE SE
 City, State, ZIP: MARYSVILLE, WA

Site Release Number:

Unocal Manager: HOWARD BRINKERHOFF

CERT INFO: (check one) ☐ Evaluation ☐ Remediation
☐ Detection ☒ Demolition ☐ Closure ☐ Miscellaneous

CR35 CODE 4300

CONSULTANT INFORMATION

Firm: GEOENGINEERS, INC Project Number: 0161-436-R04 (1.1)

Address: 8410 154TH AVE NE
REDMOND, WA
98052

Phone: 861-6000 Fax: 861-6050

Project Manager: JIM KOLL

Sample Collection by: THEO VON WALLMEICH

Chain of Custody Record #:

Quality Assurance Data Level:
☐ A ☒ B
 A: Standard Summary
 B: Standard + Chromatograms

Laboratory Turnaround Days:
 10 ☒ 5 ☐ 3 ☐ 2 ☐ 1

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONTAINERS
1. FI1-1-3.5	9.26.95 / 1043	SOIL	1
2. FI1-1-5.5	/ 1600		
3. FI1-4-3.5	/ 1145		
4. FI2-1-3.5	/ 1330		
5. FI2-4-3.0	/ 1405		
6. PL-1-3.0	/ 1305		
7. PL-2-3.5	/ 1520		
8. PL-3-3.0	/ 1530		
9.			
10.			

O Oregon		X Washington Hydrocarbon Methods													
TPH-HCID	TPH-Gas	BTEX (EPA 8020 Mod.)	TPH-Gas - BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-418.1	Halogen. Volatiles (EPA 8010)	Aromatic Volatiles (EPA 8020)	Pesticides/PCBs or PCBs Only	GC/MS Volatiles (EPA 8240/8260)	GC/MS Semi Vols. (EPA 8270)	PAHs by HPLC (EPA 8310)	Lead	Total or Dissolved	TCLP Metals (8)
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
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			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										

NCA SAMPLE NUMBER
B509532-01
-02
-03
-04
-05
-06
-07
-08

Relinquished by: [Signature] Firm: GB1 Date & Time: 9.26.95 505pm
 Received by: [Signature] Firm: NCA Date & Time: 9.26.95 1700

Final Report Approval

Were all requested results provided? ☐ yes ☐ no Define

Were results within requested turnaround? ☐ yes ☐ no "No"

Final Approval Signature: _____ on back

Firm: _____ Date: _____

GeoEngineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052
Attention: Jim RothProject Name: UNOCAL Marysville, #6357
Client Project : #0161-436-R04 (1.1)
NCA Project #: B509475Received: Sep 25, 1995
Reported: Sep 26, 1995**PROJECT SUMMARY PAGE**

Laboratory Sample Number	Sample Description	Sample Matrix	Date Sampled
B509475-01	TP-1-SEEP	Water	9/25/95

GeoEngineers

SEP 28 1995

Routing *J.R.* ☐ ☐ ☐
File *161-436* ☐

The results in this report apply to the samples analyzed in accordance with the chain of custody document.
This analytical report must be reproduced in its entirety.

NORTH CREEK ANALYTICAL Inc.*Laura Dutton*Laura Dutton
Project Manager

509475.GEO <1>

GeoEngineers, Inc.	Client Project ID: UNOCAL Marysville, #6357	Sampled: Sep 25, 1995
8410 154th Avenue N.E.	Sample Matrix: Water	Received: Sep 25, 1995
Redmond, WA 98052	Analysis Method: WTPH-G	Analyzed: Sep 25, 1995
Attention: Jim Roth	First Sample #: B509475-01	Reported: Sep 26, 1995

TOTAL PETROLEUM HYDROCARBONS-GASOLINE RANGE

Sample Number	Sample Description	Sample Result µg/L (ppb)	Surrogate Recovery %
B509475-01	TP-1-SEEP	N.D.	103
BLK092595	Method Blank	N.D.	120

Reporting Limit:	50
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4-Bromofluorobenzene surrogate recovery control limits are 50 - 150 %.
Volatile Total Petroleum Hydrocarbons are quantitated as Gasoline Range Organics (toluene - dodecane).
Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.

Laura Dutton
Project Manager

GeoEngineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052
Attention: Jim Roth

Client Project ID: UNOCAL Marysville, #6357

Sample Matrix: Water
Analysis Method: WTPH-G
Units: µg/L (ppb)

Analyst: B. Christlieb
F. Shino

Analyzed: Sep 25, 1995
Reported: Sep 26, 1995

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT Laboratory Control Sample

Gasoline

Spike Conc.
Added: 100

Spike
Result: 115

%
Recovery: 115

Upper Control
Limit %: 132

Lower Control
Limit %: 56

PRECISION ASSESSMENT Sample Duplicate

Gasoline Range
Organics

Sample
Number: B509475-01

Original
Result: N.D.

Duplicate
Result: N.D.

Relative % Difference Relative Percent Difference values are not reported at sample concentration levels less than 10 times the Detection Limit.

Maximum
RPD: 50

NORTH CREEK ANALYTICAL In

% Recovery: $\frac{\text{Spike Result}}{\text{Spike Concentration Added}} \times 100$

Relative % Difference: $\frac{\text{Original Result} - \text{Duplicate Result}}{(\text{Original Result} + \text{Duplicate Result}) / 2} \times 100$

Laura Dutton

Laura Dutton
Project Manager

509475.GEO <3>

GeoEngineers, Inc.	Client Project ID: UNOCAL Marysville, #6357	Sampled: Sep 25, 1995
8410 154th Avenue N.E.	Sample Matrix: Water	Received: Sep 25, 1995
Redmond, WA 98052	Analysis Method: EPA 8020	Analyzed: Sep 25, 1995
Attention: Jim Roth	First Sample #: B509475-01	Reported: Sep 26, 1995

BTEX DISTINCTION

Sample Number	Sample Description	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)	Surrogate Recovery %
B509475-01	TP-1-SEEP	N.D.	N.D.	N.D.	N.D.	102
BLK092595	Method Blank	N.D.	N.D.	N.D.	N.D.	110

Reporting Limits:	0.50	0.50	0.50	1.0
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4-Bromofluorobenzene surrogate recovery control limits are 59 - 144 %.
Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.



Laura Dutton
Project Manager

GeoEngineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052
Attention: Jim Roth

Client Project ID: UNOCAL Marysville, #6357
Sample Matrix: Water
Analysis Method: EPA 8020
Units: µg/L (ppb)
QC Sample #: B509376-04

Analyst: B. Christlieb
F. Shino

Analyzed: Sep 25, 1995
Reported: Sep 26, 1995

MATRIX SPIKE QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Sample Result:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10.0	10.0	10.0	30.0
Spike Result:	11.4	10.5	10.3	30.1
Spike % Recovery:	114%	105%	103%	100%
Spike Dup. Result:	11.3	10.4	10.2	30.0
Spike Duplicate % Recovery:	113%	104%	102%	100%
Upper Control Limit %:	115	116	122	122
Lower Control Limit %:	82	81	85	85
Relative % Difference:	<1.0%	1.0%	1.0%	<1.0%
Maximum RPD:	16	16	16	17

NORTH CREEK ANALYTICAL Inc.



Laura Dutton
Project Manager

% Recovery:	$\frac{\text{Spike Result} - \text{Sample Result}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Spike Result} - \text{Spike Dup. Result}}{(\text{Spike Result} + \text{Spike Dup. Result}) / 2} \times 100$

GeoEngineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052
Attention: Jim Roth

Client Project ID: UNOCAL Marysville, #6357
Sample Matrix: Water
Analysis Method: WTPH-D Extended
First Sample #: B509475-01

Sampled: Sep 25, 1995
Received: Sep 25, 1995
Extracted: Sep 25, 1995
Analyzed: Sep 25-26, 1995
Reported: Sep 26, 1995

TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE EXTENDED

Sample Number	Sample Description	Diesel Result mg/L (ppm)	Heavy Oil Result mg/L (ppm)	Surrogate Recovery %
B509475-01	TP-1-SEEP	N.D.	N.D.	81
BLK092595	Method Blank	N.D.	N.D.	81

Reporting Limit:	0.25	0.75
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2-Fluorobiphenyl surrogate recovery control limits are 50 - 150%.

Extractable Hydrocarbons are quantitated as Diesel Range Organics (C12 - C24) and Heavy Oil Range Organics (>C24).

Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.


Laura Dutton
Project Manager

GeoEngineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052
Attention: Jim Roth

Client Project ID: UNOCAL Marysville, #6357
Sample Matrix: Water
Analysis Method: WTPH-D
Units: mg/L (ppm)

Analyst: T. Fitzgibbon
Extracted: Sep 25, 1995
Analyzed: Sep 25, 1995
Reported: Sep 26, 1995

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT Laboratory Control Sample

Diesel

Spike Conc.
Added: 2.00

Spike
Result: 1.83

%
Recovery: 92

Upper Control
Limit %: 119

Lower Control
Limit %: 74

PRECISION ASSESSMENT Sample Duplicate

Diesel Range
Organics

Sample
Number: B509337-01

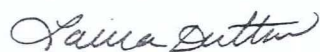
Original
Result: 0.58

Duplicate
Result: 0.44

Relative % Difference Relative Percent Difference values are not reported at sample concentration levels less than 10 times the Reporting Limit.

Maximum
RPD: 44

NORTH CREEK ANALYTICAL Inc.



Laura Dutton
Project Manager

% Recovery:	$\frac{\text{Spike Result}}{\text{Spike Concentration Added}} \times 100$	
Relative % Difference:	$\frac{\text{Original Result} - \text{Duplicate Result}}{(\text{Original Result} + \text{Duplicate Result}) / 2} \times 100$	

UNOCAL CHAIN OF CUSTODY REPORT

UNOCAL INFORMATION

Facility Number: SS # 5367 # 6367C

Site Address: 6425 33RD AVE SE

City, State, ZIP: MARYSVILLE, WA

Site Release Number:

Unocal Manager: HOWARD BRINKERHOFF

CERT INFO: (check one) ☐ Evaluation ☐ Remediation ☐ Detection ☐ Demolition ☐ Closure ☐ Miscellaneous

CRRS CODE 4300

CONSULTANT INFORMATION

Firm: GEOTECHNICAL, INC Project Number: 0161-436 R04 (1.1)

Address: 8410 154TH AVE NE
REDMOND, WA 98052

Phone: 206-861-6000 Fax: 206-861-6050

Project Manager: JIM ROTH

Sample Collection by: THU VAN WU/WHENICK

Chain of Custody Record #:

Quality Assurance Data Level:
☐ A ☒ B

A: Standard Summary
 B: Standard + Chromatograms

Laboratory Turnaround Days:
10

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONTAINERS
1. <u>TP-1-SEEP</u>	<u>9/25/95</u>	<u>W</u>	<u>3</u>
2. <u>71</u>			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

O Oregon <input checked="" type="checkbox"/> Washington Hydrocarbon Methods														
TPH-HCID	TPH-Gas	BTEX (EPA 8020 Mod.)	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-418.1	Halogen. Volatiles (EPA 8010)	Aromatic Volatiles (EPA 8020)	Pesticides/PCBs or PCBs Only	GC/MS Volatiles (EPA 8240/8260)	GC/MS Semi Vols. (EPA 8270)	PAHs by HPLC (EPA 8310)	Lead: Total or Dissolved	TCLP Metals (8)
			X		X									

NCA SAMPLE NUMBER

BS09475-01

24 hr rush as per J. Roth 9/25/95

Relinquished by: THU VAN WU **Firm:** GEOTECHNICAL **Date & Time:** 9/25/95/1315

Received by: Max **Firm:** UNOCAL **Date & Time:** 9/25 1:15pm

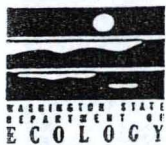
Final Report Approval

Were all requested results provided? ☐ yes ☐ no Define

Were results within requested turnaround? ☐ yes ☐ no "No"

Final Approval Signature: _____ on back

APPENDIX C



UNDERGROUND STORAGE TANK Site Check/Site Assessment Checklist

For Office Use Only

Owner # _____

Site # _____

INSTRUCTIONS:

When a release has **not** been confirmed and reported, this Site Check/Site Assessment Checklist must be completed and signed by a person registered with the Department of Ecology. **The results of the site check or site assessment must be included with this checklist.** This form must be submitted to Ecology at the address shown below within 30 days after completion of the site check/site assessment.

SITE INFORMATION: Include the Ecology site ID number if the tanks are registered with Ecology. This number may be found on the tank owner's invoice or tank permit.

TANK INFORMATION: Please list all the tanks for which the site check and site assessment is being conducted. Use the tank ID number if available, and indicate tank capacity and substance stored.

REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT: Please check the appropriate item.

CHECKLIST: Please initial each item in the appropriate box.

SITE ASSESSOR INFORMATION: This form must be signed by the registered site assessor who is responsible for conducting the site check/site assessment.

Underground Storage Tank Section
Department of Ecology
P. O. Box 47655
Olympia, WA 98504-7655

SITE INFORMATION

Site ID Number (on invoice or available from Ecology if the tanks are registered): 008396

Site/Business Name: UNOCAL SERVICE STATION No. 6357

Site Address: 6425 33RD AVENUE NE Telephone: (360) 435-4777

MARYSVILLE

Street

WASHINGTON

City

98270

State ZIP-Code

TANK INFORMATION

Tank ID No.	Tank Capacity	Substance Stored
<u>1</u>	<u>10,000 - GALLONS</u>	<u>UNLEADED GASOLINE</u>
<u>2</u>	<u>10,000 - GALLONS</u>	<u>UNLEADED GASOLINE</u>
<u>4</u>	<u>550 - GALLONS</u>	<u>WASTE OIL</u>
<u>ID NUMBER NOT LISTED</u>	<u>550 - GALLONS</u>	<u>HEATING OIL</u>

REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT

Check one:

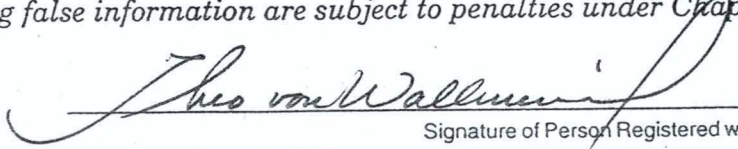
- ☐ Investigate suspected release due to on-site environmental contamination.
- ☐ Investigate suspected release due to off-site environmental contamination.
- ☐ Extend temporary closure of UST system for more than 12 months.
- ☒ UST system undergoing change-in-service.
- ☐ UST system permanently closed-in-place.
- ☐ UST system permanently closed with tank removed.
- ☐ Abandoned tank containing product.
- ☐ Required by Ecology or delegated agency for UST system closed before 12/22/88.
- ☐ Other (describe): _____

CHECKLIST

Each item of the following checklist shall be initialed by the person registered with the Department of Ecology whose signature appears below.

	YES	NO
1. The location of the UST site is shown on the vicinity map.	TW	
2. A brief summary of information obtained during the site inspection is provided. (see Section 3.2 in the Site Assessment Guidance)	TW	
3. A summary of UST system data is provided. (see Section 3.1)	TW	
4. The soils characteristics at the UST site are described. (see Section 5.2)	TW	
5. Is there apparent groundwater in the tank excavation?		TW
6. A brief description of the surrounding land is provided. (see Section 3.1)	TW	
7. Information has been provided indicating the number and types of samples collected, methods used to collect and analyze the samples, and the name and address of the laboratory used to perform the analyses.	TW	
8. A sketch or sketches showing the following items is provided:		
- location and ID number for all field samples collected	TW	
- groundwater samples distinguished from soil samples (if applicable)	TW	
- samples collected from stockpiled excavated soil	TW	
- tank and piping locations and limits of excavation pit	TW	
- adjacent structures and streets	TW	
- approximate locations of any on-site and nearby utilities		TW
9. If sampling procedures different from those specified in the guidance were used, has justification for using these alternative sampling procedures been provided? (see Section 3.4)	N/A	
10. A table is provided showing laboratory results for each sample collected including: sample ID number, constituents analyzed for and corresponding concentration, analytical method and detection limit for that method.	TW	
11. Any factors that may have compromised the quality of the data or validity of the results are described.	TW	
12. The results of this site check/site assessment indicate that a confirmed release of regulated substance has occurred.	TW	

SITE ASSESSOR INFORMATION

THEO VON WALLMENICH		GEOENGINEERS, INC.	
PERSON REGISTERED WITH ECOLOGY		FIRM AFFILIATED WITH	
BUSINESS ADDRESS: 8410 154 TH AVENUE NE		TELEPHONE: 206 861-6000	
REDMOND	WASHINGTON	98052	
CITY	STATE	ZIP+CODE	
I hereby certify that I have been in responsible charge of performing the site check/site assessment described above. Persons submitting false information are subject to penalties under Chapter 173-360 WAC.			
11/22/95	 Signature of Person Registered with Ecology		
Date			